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Observations of Occultations of Stars by the Moon, and of Phenomena of Jupiter's Satellites, made at the Royal Observatory, Greenwich, in the Year 1879.

(*Communicated by the Astronomer Royal.*)

Occultations of Stars by the Moon.

Day of Obs.		Phenomenon.		Telescope.	Power.	Moon's Limb.	Mean Solar Time of Observation.			Observer.
1879.							h	m	s	
Mar. 30	(*a*)	Disapp. of	Piazzi vi. 165	E. Eq.	310	Dark	7	16	3·8	AD
Apr. 30	(*b*)	„	Bradley 1393	„	140	„	9	56	13·6	R
May 3		„	*q* Virginis	Altaz.	100	„	9	19	32·6	GP
July 28	(*c*)	„	Antares	S.E. Eq.	220	„	9	37	38·5	WC
„	(*d*)	„	„	Simms No. 2	60	„	9	37	38·8	W
„	(*e*)	„	„	Altaz.	100	„	9	37	38·9	BD
„	(*f*)	„	„	Simms No. 1	145	„	9	37	39·2	M
„	(*g*)	„	„	E. Eq.	140	„	9	37	39·2	GP
„	(*h*)	Reapp.	„	Altaz.	100	Bright	10	6	44·6	BD
„		„	„	E. Eq.	140	„	10	6	46·0	GP
Aug. 25	(*i*)	Disapp.	Bradley 2174	„	„	Dark	8	5	38·9	AD
Sept. 26		„	λ Capricorni	Altaz.	100	„	10	40	20·1	T
Oct. 4		Reapp.	36 Tauri	E. Eq.	140	„	11	39	35·8	TP
Nov. 18	(*k*)	Disapp.	σ Capricorni	„	„	„	6	35	41·0	C
„	(*l*)	„	„	Altaz.	100	„	6	35	42·4	AD
Nov. 22		„	16 Piscium	E. Eq.	140	„	7	55	43·7	C
Dec. 22	(*m*)	„	101 Piscium	Altaz.	100	„	5	6	55·4	T
„	(*n*)	„	„	E. Eq.	140	„	5	6	57·4	C

Notes.

(*a*) Instantaneous; registered on the chronograph.

(*b*) Instantaneous.

(*c*) The *comes* disappeared gradually about 12 seconds before *Antares*. It was very distinctly seen just clear of the rays from *Antares*, and was of a deep blue colour. *Antares* disappeared instantaneously.

(*d*) The star's image blurred; disappearance instantaneous.

(*e*) The star seemed to disappear instantaneously, but was a little diffused about a second before disappearance.

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(*f*) Instantaneous; observed with the Airy eye-piece. The companion was seen clearly till about two minutes before the disappearance, but the star then became very tremulous, and the companion was lost in its rays.

(*g*) Disappeared instantaneously.

(*h*) The limb of the Moon was rather tremulous, but the observed time is probably within half a second. No particular change of colour was noticed.

(*i*) Instantaneous; registered on the chronograph.

(*k*) Observation considered very good.

(*l*) Observation accurate; the observer could see the dark limb of the Moon; registered on the chronograph.

(*m*) Star faint; observation uncertain.

(*n*) Good.

Phenomena of Jupiter's Satellites.

Day of Obs.	Satellite.	Phenomenon.	Telescope.	Power.	Mean Solar Time of Observation.	Mean Solar Time from *N.A.*	Observer.
1879.					h m s	h m s	
June 28	I	Tr. ing. first contact	Altaz.	100	13 3 13	13 12	AD
,,	I	,, last contact	,,	,,	13 8 57		
July 1	III	Ecl. reapp. first seen	,,	,,	13 6 46	13 8 35	C
Aug. 5	I	Ecl. disapp. first obs.	E. Eq.	140	13 6 16	13 8 20	AD
,,	I	,, last seen	,,	,,	13 8 50		
,, (*a*)	I	,, first obs.	S.E. Eq.	220	13 6 4	13 8 20	M
,,	I	,, dichotomised	,,	,,	13 7 14		
,,	I	,, last seen	,,	,,	13 9 1		
Aug. 6 (*b*)	II	Occ. reapp.	E. Eq.	140	12 49 38	12 51	J
Aug. 21 (*c*)	I	,, bisection	,,	,,	13 57 32	13 58	BD
,,	I	,, last contact	,,	,,	13 59 46		
Aug. 22	II	Tr. ing. last contact	Altaz.	100	9 4 53	9 4	R
,, (*d*)	II	Tr. egr. first contact	E. Eq.	140	11 52 26	11 55	,,
,,	II	,, bisection	,,	,,	11 54 6		
,,	II	,, last contact	,,	,,	11 55 36		
Aug. 28 (*e*)	I	Ecl. disapp. last seen	,,	,,	13 21 27	13 21 32	,,
Sept. 15	I	Ecl. reapp. first seen	,,	,,	8 24 29	8 24 25	AD
,,	I	,, full brightness	,,	,,	8 26 50		
Sept. 25	III	,, first seen	,,	,,	13 13 0	13 15 30	J
,,	III	,, half brightness	,,	,,	13 14 35		
,,	III	,, full ,,	,,	,,	13 16 50		
Oct. 7	I	Tr. Ing. first contact	,,	,,	8 9 20	8 11	
,,	I	,, bisection	,,	,,	8 12 19		
,,	I	,, last contact	,,	,,	8 15 29		

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Day of Obs.	Satellite.	Phenomenon.	Telescope.	Power.	Mean Solar Time of Observation.			Mean Solar Time from N.A.			Ob-server.
1879.					h	m	s	h	m	s	
Oct. 9	II	Ecl. reapp. first seen	E. Eq.	140	10	52	5	10	53	5	C
„ 15	I	„ „	„	„	10	35	17	10	35	8	J
„	I	„ half brightness	..	..	10	36	36				
„	I	„ full	..	..	10	37	21				
Oct. 20 (*f*)	III	Tr. Ing. first contact	S.E. Eq.	130	7	30	51	7	32		M
„	III	„ bisection	..	..	7	34	55				
„	III	„ last contact	..	..	7	39	30				
Oct. 25	II	Tr. ing. first contact	E. Eq.	140	6	2	7	6	3		C
„	II	„ last contact	..	..	6	6	21				
„	II	Tr. egr. bisection	..	..	8	49	10	8	55		„
„	II	„ last contact	..	..	8	51	39				
„	IV	Ecl. disapp. last seen	..	..	9	29	53	9	34	29	„
Nov. 7	III	Occ. reapp. bisection	..	..	8	15	9	8	20		AD
„	III	„ last contact	..	..	8	17	24				
„ (*g*)	III	Ecl. disapp. first obs.	„	„	9	49	24	10	6	52	„
„	III	„ last seen	„	„	9	55	8				
Nov. 11 (*h*)	IV	Ecl. reapp. first seen	S.E. Eq.	310	7	37	23 ±	7	38	50	WC
„	IV	„ full brightness	„	„	7	53	20 ±				
„	IV	„ first seen	E. Eq.	140	7	37	1	7	38	50	AD
„	IV	„ full brightness	„	„	7	43	0				
Nov. 14	III	Occ. disapp. last contact	„	„	8	39	6	8	38		T
„	I	„ „	„	„	9	11	31	9	11		„
Nov. 15	III	Tr. ing. first contact	„	„	6	19	23	6	19		AD
„	III	„ bisection	„	„	6	21	3				
„	III	„ last contact	„	„	6	22	38				
Nov. 19 (*i*)	IV	Tr. egr. first contact	S.E. Eq.	220	6	5	1	6	20		M
„ (*k*)	IV	„ last contact	„	„	6	16	0				
Dec. 2 (*l*)	I	Ecl. reapp. first seen	E. Eq.	140	5	36	12	5	35	51	AD
„	I	„ full brightness	„	„	5	39	22				
„	III	Tr. ing. first contact	„	„	6	40	12	6	44		„
„	III	„ last contact	„	„	6	51	40				
„	I	Ecl. reapp. first seen	S.E. Eq.	130	5	35	48	5	35	51	M
„	I	„ half brightness	„	„	5	36	54				
„	I	„ full brightness	„	„	5	38	44				
„	III	Tr. ing. first contact	„	„	6	45	33	6	44		„
„	III	„ bisection	„	„	6	49	3				
„	III	„ last contact	„	„	6	52	47				

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Day of Obs.	Satellite.	Phenomenon.	Telescope.	Power.	Mean Solar Time of Observation.	Mean Solar Time from *N.A.*	Observer.
1879.					h m s	h m s	
Dec. 6 (*m*)	III	Ecl. reapp. first seen	,,	285	5 27 20	5 30 42	,,
,, (*n*)	III	,, ,,	T.C.	100	5 29 41	5 30 42	TP
Dec. 8 (*o*)	I	Tr. ing. first contact	E. Eq.	140	6 32 13	6 35	J
,,	I	,, bisection	,,	,,	6 35 28		
,,	I	,, last contact	,,	,,	6 38 48		

Notes.

(*a*) Definition very good; observed with the Airy eye-piece.

(*b*) Planet very tremulous; limb boiling.

(*c*) Tremulous.

(*d*) Definition good; the satellite was seen on *Jupiter* three or four minutes before the first contact.

(*e*) Disappeared close to the limb of *Jupiter*.

(*f*) Limb boiling.

(*g*) Observation not satisfactory; *Jupiter* was low down in the mist.

(*h*) Estimated time of reappearance; the satellite was first noticed one minute later, and was then quite faint.

(*i*) *Jupiter* very unsteady; limb boiling. The satellite was seen just for a moment, and was perhaps $\frac{1}{6}$ off the limb.

(*k*) Four minutes before, at 6^{h} 12^{m}, the satellite was perhaps $\frac{3}{4}$ off. At 6^{h} 14^{m} it was suspected to be clear of the planet, but it seemed to join the limb again. Clouds were passing continually during the observation.

(*l*) Definition good at this and the following observation.

(*m*) The first faint sparkle of the satellite was admirably seen.

(*n*) Observed with the field half illuminated, while *Jupiter* was passing the wires in the Transit-Circle telescope.

(*o*) *Jupiter* very tremulous and ill-defined.

The clear aperture of the object-glass of the S.E. Equatoreal is $12\frac{3}{4}$ inches, of the East Equatoreal 6·7 inches, of the Altazimuth $3\frac{3}{4}$ inches, and of the Transit-Circle 8 inches.

The initials WC, C, AD, M, T, W, BD, R, GP, J, and TP are those of Mr. Christie, Mr. Criswick, Mr. Downing, Mr. Maunder, Mr. Thackeray, Mr. Wickham, Mr. Dennison, Mr. Robinson, Mr. Pearce, Mr. James, and Mr. Plucknett.

Royal Observatory, Greenwich,
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